

ABSTRACT OF THE DISCLOSURE

A method for calculating the refractive index and the extinction coefficient for materials relates the physical parameters being calculated to the scattering caused by interband states in the material using a model which includes a quantum mechanical transition equation for transitions between valence and/or conduction bands and interband states of the material. The method can be used for material engineering, process control for processes affecting the interband states in the material, and in estimation of the amount of interband states which have been introduced into a material as a result of such a process. Apparatus for implementing the method are also disclosed.